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CURRICULUM GUIDE

for

Agriculture 10

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The Place of Agriculture in Education

Agriculture Education

Agriculture is several things at one and the same time. It is a mode of life. It is a vocation. It is both a science and an art.

Agriculture is a way of living, as the typical farmer lives in the midst of his activities day and night. In this vocational environment he sleeps, eats, secures much of his recreation, and earns his daily bread. In few human situations is the individual so closely confined to the limits of his vocation. This circumstance suggests that the life needs of our farming population may be in some respects quite at variance with those who follow other vocational activities. The fact that farming usually requires the performance of some agricultural activities on the part of every member of the farm family has its implications for education -- this should not be lost sight of by our educationists.

As there are many vocations in agriculture, so there are many vocations in farming itself. The wheat producer, the sugar beet grower in the irrigation areas, the dairy farmer in the Edmonton milkshed, and the fur farmer each follows a peculiar farming vocation. In all cases economic goods and services are produced, surplus to the farmer's family needs, to be exchanged for goods or services produced by some other group. This economic aspect is an example of interdependence and division of labor within the community. The very word vocation suggests a calling, a conscious interest, an inner stimulation; the most common use of this definition is the phrase religious vocation. In the case of the farmer we find the producer not only making available a wide range of goods and services for others, but deriving for himself a great measure of satisfaction. One of the most important considerations the teacher can keep in mind is this subjective range of satisfactions open to the farm producer.

Many sciences are currently contributing to what we are pleased to call the science of agriculture. This contribution is only of comparatively recent date. While such contributing sciences are not agricultural sciences, they become integrated when parts of each are used in dealing with agricultural problems; like several other "sciences", agricultural science is really composed of portions of the many contributing sciences. Modern agriculture has profited by the scientific knowledge resulting from man's successful attempts to meet life problems. In our teaching, then, we must deal with agriculture as one of the applied sciences.

Agriculture in producing articles for man's use requires an integration of manipulative skills useful in dealing with biological and physical nature. There is artistry in every thing the farmer or his family or his hired help does well. Farming itself is an utilitarian art; it is made up of continuous doing. The economic contribution to the community is made through the farmer's doing. The farmer must possess certain definite skills -- including peculiar habits of physical activity and appropriate standards of achievement. These specific habits and standards of achievement are essential to the successful production and disposal of his goods and services.

Purposes in Agricultural Education

Agricultural education may serve one or several purposes. Before we can plan and properly evaluate agricultural education, the objective or objectives should be clearly defined.

General agriculture as a high school subject must have its peculiar purposes The word general implies that this kind of agricultural education is a phase of general education -- a group of learning areas desirable for all students at the secondary level. General agriculture should provide a medium for gaining an understanding of the intimate relationships of plants and animals with each other and with their physical environment. It should develop a strong appreciation of agriculture as a most varied and important Canadian industry, and particularly of the agriculturalist's reliance upon Canadian and world economic policies for his welfare. It should engender attitudes of sympathetic understanding toward farm folk and their varied problems; this last will greatly assist in the social adjustments of both urban and rural folk.

Prevocational agricultural education should provide a clear preview of vocational training in Agriculture, and should indicate the contribution the latter can make to the welfare of the farming community. It may well serve as foundation for vocational agricultural education and not only assist the farm boy in making up his mind to follow the vocational pattern but also provide an essential commencement of supervised farming programs. This guidance value is important in its implications. Further, a pre-vocational agricultural course should have as its purposes all of the objectives of a course in general agriculture.

In the United States, vocational agricultural education is designed "to train present and prospective farmers for proficiency in farming". Its basic aim is preparation for an agricultural vocation. The education for a definite farming occupation is specified beyond doubt. It is for the expressed purpose of teaching farming, and "success in farming is measured by achievement on the farm" (Dean Alfred Vivian, Ohio State Agricultural College). The purposes of vocational agricultural education can be many; a few of these objectives could be:

1. Development of appreciations, understandings, attitudes, skills, and habits associated with the art, science, mode of living, and occupational phases of agriculture.

2. Understanding and appreciation of the basic reasons behind recommended practices to the point at which these practices will be permanently established.

3. Development of capacities for community leadership and participation into abilities freely practiced from childhood through to old age.

4. Understanding and appreciative attitudes toward thrift and intelligent spending, whether private or public.

5. Development of basic manipulative, mechanical, constructive skills and techniques essential to progressively productive, profitable, and happy farm living.

The objectives essential in successful vocational agricultural education include all of those associated with general and prevocational agricultural education and more. In brief, the education must be of the type that will prepare the boy for life as well as for a specific vocation in agriculture.

Whether we think of general or of vocational agricultural education, we must consider its worth to the prospective learners in terms of other things they may learn in its stead. None of us can learn everything; should we not learn that which is most worth to us -- that which most vitally affects our well-being?

We frequently hear that farmers consider that the schools have no worthwhile things to teach them. Farmers have some knowledge of soils, weeds, crop plants, farm mammals and birds, and other farming matters; their accomplishments, however, have most to do with the arts handed down from generation to generation without reference to varying environments. Education can make all of these (and vastly more) things really meaningful to those who previously viewed them unappreciatively. Intelligently selected portions of the pure sciences, brought into play on the problems of the farm and farm home, could result in a very vitalizing type of science teaching. One of the most significant services that agricultural education may do is to develop a new vision of the rich world of farm life - to create in the people a new understanding and appreciation of a world at hand. Once understanding the variety and meaningfulness of food collection and preparation in plants, of invertebrates and vertebrate animals affecting farm productivity and happiness, of the physical and biological realms of the soil, of crop production, of fertilization, and of other equally involved and interesting phases of the farm environment, no person will live again in his former world. Development and reorganization of understandings, attitudes, and appreciations is an essence of education.

Important Features of the New Agriculture Program

It is most desirable that the following points be observed with respect to the teaching of the program outlined in any course:

1. The course should be adjusted to student and community needs.
2. The teaching should not necessarily be aimed at "covering" the course in its entirety.
3. The units in the course should not necessarily be taught in the sequence given but should be closely related to seasonal changes in agricultural activity.
4. Teachers are expected to select and add to the course as the needs seem to demand.
5. Teachers should not attempt to teach all they know in any given area but should train the pupil to find out things for himself.
6. Courses should be taught only by graduates in Agriculture unless special permission is received from the Department of Education.
7. Boards of School Trustees are expected to provide a reasonable sum of money each year for the purchase of references, supplies, and equipment so that adequate facilities may be gradually built up and maintained over a period of years.

Objectives of Agriculture Education

It is the aim of formal education to assist in the developing of young people with a well-rounded approach to what constitutes abundant life and living. This includes the educating of young citizens that they may come to have an appreciation of their place in the community and a realization of their responsibilities as well as their privileges. It also includes the developing of strong vocational interests, aptitudes, and abilities to the end that these young people may be better able to take their proper place in the world of work and earn their daily bread. In rural areas one of the most effective vehicles through which this may be accomplished is the field of agriculture education. It is upon this premise that the course of study in agriculture has been developed.

This subject should become an integral part of the total school curriculum, designed particularly to enhance the curricular offering of schools in agricultural communities. It is especially concerned with the farm boy

Many students in these rural communities are inclined to leave school early. As a consequence, the level of educational preparation in agriculture tends to fall below the average for other occupations. Successful farming requires intelligence, ability, and training. The farmer and other agriculturalists should receive the same consideration as is accorded those in other highly skilled vocations. It is hoped that, through the provision of basic training in agriculture, the student will be encouraged to remain in school, thereby receiving the maximum benefits from his total education and developing an appreciation and understanding of agriculture and rural life.

In addition to contributing to the over-all aims of education, a good course of study in agriculture should be specifically concerned with certain broad objectives, which may be summarized as follows:

1. To provide a rich background of knowledge and information. This means, for example, presenting data regarding such operations as selecting seed, purchasing stock, and improving the farmstead as a place to work and to live, or such problems as plant and animal disease control, soil conservation, marketing, and farm management. It is important that the subject material be selected and related to the needs and interests of the pupils, and the conditions in the community and in the province. It is equally important to maintain a proper balance between practice and theory. It is not intended that this course be devoted to presenting subject-matter for its own sake. The ability to secure and use information is probably more important than the information itself. Furthermore, the whole field of agriculture is so broad, and the scientific and technical applications so numerous, that it is impossible in the school situation to present all of the information necessary to successful farming. Care should be taken, therefore, to present only meaningful subject material. The purpose is first to secure a better understanding of the agricultural phases of local and provincial economy, and, secondly, to provide background and training in order that the student who intends to make farming his career may know how to go about getting information for himself.

2 To develop proficiency in fundamental agricultural skills and abilities.

This objective is based upon the very sound principle of "learning by doing". It is concerned with such things as determining the best size and scope of a crop enterprise, repairing and conditioning common farm tools, and financing a farm business. Students should be encouraged to analyze their own situations, to formulate their own problems, and to put into practice the results of their studies. Those who intend to enter an agricultural vocation should be encouraged to extend and intensify this aspect of the course along lines which will (a) contribute to their preparation for the type of agriculture they are likely to undertake, and (b) provide actual experiences in the production for sale of agricultural commodities and services.

3 To develop strong vocational interests in agriculture and to give aim and purpose to further vocational training.

This objective is based upon the assumption that the abilities of young people may be most effectively developed when there is some reference to a vocation which they may follow through life. At the same time the objectives or purposes of the study of agriculture at the secondary-school level should not be limited to producing farmers. The study of agriculture should certainly stimulate interest and have functional values for those who will be farmers, but it should also be of benefit to those entering other or related occupations. This course recognizes the fact that the two concepts, training to live and training to make a living, are complementary to one another. Both are essential features of a sound education. The aim here is to assist in maintaining a proper balance between the two with constant reference to the needs, interests, and future aspirations of the student.

4. To develop desirable attitudes and appreciations.

It has been said that the more formal and traditional types of education have the effect of influencing young people away from rural communities and farm life. It is part of the function of this course to develop a sympathetic understanding of the community in which the young person lives. He should come to have an appreciation of the role which he should play in our democratically organized society. He should appreciate the simple lesson that all cannot enjoy the good life simply by "taking in each other's washing". A large proportion of people must always be engaged in producing the necessities of life. Whether or not the student becomes an agriculturalist, he should know what being an agriculturalist means and should develop an attitude of respect and appreciation not only for the service which the agriculturalist renders to society, but also for the work of all others in his community. If he becomes a farmer he should regard his ownership of land as something he holds in trust for future generations, and further he should realize that he has a responsibility not only to himself and his family, but also to his community and his country. These are but some of the implications of this all-important objective.

5. To provide opportunities for developing leadership, co-operation, and citizenship.

Since agriculture is of such fundamental importance to the existence of human life, and since much of the study of agriculture must of necessity be realistic, practical, and bound up with the community life, the opportunities for developing desirable personal qualities are manifold. Group participation in such activities as purchasing stock, visiting farms, or arranging community fairs, and assisting one's neighbors, provide a realistic setting for training in leadership, co-operation, and citizenship. Farm mechanics work, too, is concerned with developing self-confidence, a pride in honest workmanship, and a sense of responsibility just as much as it is with developing mechanical skills. Every effort should be made to stress the dignity and importance of agriculture as a vocation and the agriculturalist as a citizen. This objective, therefore, should be regarded as being of fundamental importance in the study of agriculture in the secondary school.

6. Specifically, to help the student who has decided to follow an agricultural vocation, in selecting basic agricultural enterprises which could form the beginnings of a future supervised program in vocational agriculture, the main objectives of which are:

a. to make an actual beginning and advancement in an agricultural vocation,
b. to produce agricultural products and services efficiently,
c. to learn by doing the marketing of agricultural products and services,
d. to appreciate and to learn conservation of our natural resources,
e. to learn to manage an agricultural business,
f. to learn to maintain a happy home environment.

Description of the courses in agriculture

Agriculture 10

This is an introductory course and may be offered in any secondary school possessing a qualified agriculture teacher. It is prerequisite to Agriculture courses 20,30,21 and 31. For those students who are intending to follow the vocational program, Agriculture 10 should be adapted and considered as a pre-vocational course, with some attention being given to training in fundamental skills and preparation of plans for a long-term supervised agricultural program. It is suggested that students enroling in Agriculture 10 who are likely subsequently to take Agriculture 21 and 31 should enrol in one of Agriculture 15, 16, or 17 during that year; otherwise it may be impossible to experience all of Agriculture 15, 16 and 17

Agriculture 20 and 30

These courses when organized will be designed for schools in which facilities for a complete practical program are not available. Students enrolled in these courses must carry on some practical work, or projects, as far as circumstances permit.

Agriculture 21 and 31

These courses are essentially practical in nature. Every student in Agriculture 21 and 31 will be required to carry on a supervised agricultural program and to take accompanying courses in Farm Mechanics.

Agriculture 15, 16 and 17

These are the courses formerly partially included in Farm and Home Mechanics 1 and 2. They are designed to accompany Agriculture 10, 21 and 31. They may be taken with profit by students who do not contemplate entering the vocation of farming and who are pursuing the General or the University program.

Course Chart

Course name	Abbreviation	Grades	Minutes per week	Credits	Comments
Agriculture 9	Ag. 9	IX	70 - 140	2 - 4	
Agriculture 10	Ag. 10	X, XI or XII	175	5	Introductory general course which is pre-vocational with respect to Ag. 21 and Ag. 31.
Agriculture 21	Ag. 21	X, XII	280 - 420	8 - 12	Practical courses for vocational students and must be taken in sequence. Some double periods are desirable. Supervised agricultural programs are integral.
Agriculture 31	Ag. 31	XII	350 - 700	10 - 20	
Agriculture 15	Ag. 15	X, XI, XII	175	5	Accompanying courses in Agricultural Mechanics, formerly Industrial Arts. Any two are required.
Agriculture 16	Ag. 16	X, XI, XII	175	5	
Agriculture 17	Ag. 17	X,XI,XII	175	5	
Agriculture 20	Ag. 20	XI, XII	175	5	Revised courses in the field of general Agriculture. Only for schools where facilities are limited. (Ag.20 will not be offered before 1953; Ag.30 will not be offered before 1954.)
Agriculture 30	Ag. 30	XII	175	5	

Organization of the courses

Each course in Agriculture should be developed as a cross-section of a total agricultural program. For purposes of instruction, the work of agriculture has been divided into "areas" or "segments" such as animal production, vegetable gardening, and farm management. Thus the work in each year of a course should be integrated to closely approximate the work of the farm as a unit. The limiting factor is the need and maturity of the pupil.

Adaptation of courses

The content of the courses should be flexible. This should permit individualized instruction and adaptation to suit local conditions. Adjustment to this end requires particularly careful planning on the part of the Agriculture teacher. From within the frame-work of courses as outlined, an effective teaching program should be logically and systematically developed.

It will be desirable that Agriculture 20 and 30 be made as practical as facilities will permit by enrichment with material from Agriculture 21 and 31.

The place of practical work

Students in all courses in Agriculture should know that they are expected to plan and carry out some practical work. This is an integral part of each course and must be basic in Agriculture 21 and 31. The central purpose is to provide agricultural experience so that the student may learn what a good agriculturalist must do.

The awarding of credits should depend to a considerable degree upon the quality of the practical work carried out by the student.

The supervised agricultural program

A definite supervised agricultural program for each boy is required in each of the courses, Agriculture 21 and 31. It should not be considered as an adjunct or extra-curricular activity, nor should it be devoted to the purposes of experimentation or research. It should be a bona fide agricultural program on a small scale carefully planned to suit the needs of the pupil and the conditions in the community and inaugurated in the Agriculture 10 year.

A good supervised agricultural program will possess the following characteristics. It should be:

1. Co-operatively planned by teacher, pupil, and parent with provision for pupil ownership of at least some projects making up the student's supervised program.
2. Adapted to conditions on the home farm on a business-like basis and including a parent-son agreement.
3. Continuous and potentially expansible in size and scope.
4. Constantly improving in quality through the use of approved practices.
5. Directed toward training and long-term educational goals as well as toward financial returns.
6. Inclusive of:
   a. Major projects such as raising poultry, calves, or pigs.
   b. Contributory projects such as growing the necessary feed.
   c. Improvement projects such as construction or repair of buildings, fences and equipment.

d. Supplementary farm practices such as setting up a farm workshop, milk testing, egg-grading, R. O. P., etc.
e. Organization of a future Farmers of Canada Chapter.

Farm Mechanics

Agriculture 15, 16, and 17 are courses in Farm Mechanics and must accompany Agriculture 21, 31, course by course, and if possible 10 as an integral part of the Agriculture program. They include all the unspecialized mechanical activities which a progressive farmer should perform on his own home farm with the tools and equipment commonly available. The five possible areas of instruction are as follows:

1. Farm shopwork
2. Farm power and machinery
3. Farm buildings and conveniences
4. Soil and water management
5. Rural electrification

Instruction in Farm Mechanics has the following objectives:
1. Acquiring a knowledge of, an interest in, and an understanding of mechanical activities necessary on a farm.
2. Developing the skill and ability necessary for the performance of common farm jobs of a mechanical nature, in a safe manner.
3. Developing abilities in the selection, maintenance, and use of common tools and equipment, including their construction and repair.
4. Developing desirable qualities including:
   a. Self-confidence gained through experience.
   b. Industry, carefulness, and accuracy in workmanship.
   c. Pride, honesty, and a desire to do a good job.
   d. Sound judgment and critical thinking.

For the vocational student, Farm Mechanics should have one additional objective, namely, that of encouraging and guiding the student in developing a good home-farm shop in which can be carried out timely and time-saving repairs not requiring intensive skill or expensive but little-used equipment.

Instruction in Farm Mechanics

If the agricultural teacher is qualified in farm shop he should teach it. Otherwise this will be the joint responsibility of the Industrial Arts and the Agriculture teachers and actual instruction in such cases should be given by the Industrial Arts teacher. It is most desirable that close co-operation be maintained at all times in program planning. A willingness on the part of each teacher to recognize and appreciate the nature and objectives of both aspects of the program will do much to achieve the integration desired.

It is important to remember that instruction in Farm Mechanics is being given for a specific purpose or purposes. It is not primarily aimed at achieving a standard of perfection or producing a technically skilled mechanic. In most instances the purpose will extend beyond that of developing specific skills or abilities. A student may be able to draw technically perfect plans for a hog house, but if he cannot build a good hog house when he needs it, the instruction has not fulfilled its purpose. Although in general one should not accept from any student anything but his best, it is not always desirable to demand perfection in something which does not require it. The major goal is to be able to do a functional and workmanlike job.

An excellent discussion of the Farm Mechanics program will be found in Part IV of "A Handbook on Teaching Vocational Agriculture", by G. C. Cook (Interstate Publishing Co.).

4 - H Clubs

4 - H Club work has a definite contribution to make in the field of training in agriculture and rural living. It is desirable that the closest co-operation be maintained between the Club program, which may be sponsored by the Department of Agriculture, and the Agriculture program of the school. However, the two programs are meeting different needs and are not substitutes for each other. Each should maintain its separate identity but in close co-operation. 4 - H Clubs, with their younger membership, can do much to create interest and encourage enrolment in the Agriculture program. The Agriculture program in turn can make provision for training senior students as leaders to help the supervisors of the 4 - H Clubs. Both have one essential common bond, the welfare of the young person in the rural community and the arousing of his interest in agriculture.

Judging and Exhibiting

In all educational activities competition has some part to play. Unfortunately, it frequently becomes an end in itself. In this program, judging, exhibiting, the grouping of exhibits, and so forth should be used with discretion and only as devices for stimulating interest, improving performance and quality, and generally advancing the student in agricultural training. It may be wise to substitute such terms as "selecting", "evaluating", "grading", and so forth to indicate more accurately the purpose of the activity.

The Summer Program

Purpose of the Program

It is evident that to be functionally effective, instruction in agriculture should be on a year-round basis. The Summer Program is designed primarily to provide the opportunity for an intensive follow-up of the instruction given during the official school year.

Because it is somewhat informal, highly individualized, and embracing a wide variety of activities, the Summer Program must be carefully planned beforehand. Otherwise it will become, educationally at least, a waste of time.

Major goals of this part of the Agriculture Program should include:

a. Providing individual and group instruction on particular phases of agriculture and in connection with actual agricultural operations.
b. Assisting in the evaluation, revision, and planning of students' agricultural programs, with particular attention being given to those working to become established in agriculture.
c. Working with prospective students and their parents on student programs of supervised agriculture.
d. Evaluating, revising, and planning school instructional programs for the next year.

The Summer Program shall include the following:

a. Visiting the students' home farms, supervising existing projects, giving on-the-farm instruction, planning students' future projects.
b. Surveying and becoming acquainted with community agricultural activities and problems as a basis for school instruction in the coming year, and planning the coming year's program.
c. Completing records of supervised individual and group agricultural projects, arranging for and ordering supplies, repairing and maintaining facilities and equipment.

The instructor shall prepare during the month of May a specific outline of a proposed Summer Program and after consultation with his principal and superintendent shall submit it to his school board.

The Board of School Trustees shall forward the outline to the Department of Education by June 15 accompanied by an application on a prescribed form for the grant-in-aid. This application shall indicate, among other things, the duration in weeks which the instructor will work during July and August, the percentage of time each week being devoted to supervision of students, number of students and projects being supervised, and the monthly salary proposed.

The Department of Education will approve or offer suggestions in respect of the program.

At the conclusion of the Summer Program the instructor shall prepare on a form provided and submit to the Board of School Trustees and to the Department of Education a report on his summer activities.

The teacher's outline of a Summer Program should make specific reference to the type of activities, the approximate time to be allotted to each, and the number of students involved. The following activities form a suggested list from which the Summer Program may be developed:

1 Visiting home farms and giving on-the-farm instruction.
2. Visiting prospective students and helping them select their program.
3. Working with groups on particular agricultural projects related to school and community.
4 Studying and evaluating the teaching program in the past year
5 Studying and surveying the farms in the community to determine problems, prospective students, possibilities for expansion, and so forth
6 Working out plans for next year in detail.
7 Collecting information and material relating to agriculture and the community.
8 Making an inventory of materials and equipment for teaching, ordering new supplies, repairing and maintaining present equipment
9. Completing the following:

   a. Records of all supervised agricultural programs.
   b. Records to date of present enterprises.
   c. Reference records of bulletins, maps, and charts.
   d. Records of group work, projects, activities, etc.
   e. Organization and filing of all reports, books, teaching outlines, and supplies

10 Conducting classes of instruction where requested.
11. Engaging in study and activities for professional improvement.

Suggestions to Principals

Introducing the program

It is important that the principal assume some responsibility for leadership and guidance in developing a program of agriculture education for the school. Such a program will be very closely concerned with the community, with parents, farmers, school trustees, and pupils. If it is to have maximum benefit to pupils and to the community, it must receive understanding and active support from all interested citizens as well as from members of the teaching staff. The principal, therefore, as head of the school, should be fully informed regarding the proposed program and its development in order that he may give the guidance and supervision necessary to its success.

Student enrolment

In view of the fact that the teacher is expected to visit and supervise each student's agricultural program, it is desirable that classes in agriculture be limited in size. The optimum student enrolment for each course is twenty-five.

It is also important to see that these courses do not become a "dumping ground" for misfits and problem cases. On the other hand, these courses should not be reserved exclusively for those who have strong natural interests in agriculture.

In the case of those who are genuinely interested in the study of agriculture, but who possibly live in town and have no opportunity for doing the practical work, it may be desirable to make special arrangements for them to conduct a supervised agricultural program on a neighbouring farm. Such arrangements should always be made on a business-like basis with student and parent fully cognizant of all details.

The special features of these agriculture courses, while enhancing their value to the student, also make the enrolling of students a matter of some importance. Guidance in course selection and discussion between student, parent, and agricultural teacher should be prerequisites to student enrolment.

Timetables

If possible agriculture classes should be scheduled so as to allow for such activities as field trips, practical demonstrations, or inspection of supervised agricultural programs. Afternoon periods, or the last two periods in the morning would be essential for this purpose.

Combining classes

Classes of vocational students may be combined for one period per day with classes taking the minimum course in Agriculture 20 or 30. It may also be possible to combine classes in the different courses, as, for example, Agriculture 21 combined with Agriculture 31. In this case it is desirable to keep junior and senior groups separate.

In addition to grouping or combining classes, it is also possible to offer courses Agriculture 21 and 31 in alternate years. It is desirable to preserve the continuity of the three-year program as far as the student is concerned.

The teacher

It is most important that the Agriculture teacher be well qualified both in Agriculture and in education generally. His personality and professional ability should be such that he will have the respect of his pupils, the teaching staff, and the community. Is is upon him that the effectiveness of this program will largely depend.

The Agriculture teacher should have the same status and assume the same responsibilities as any other member of the teaching staff. At the same time it might be noted that his activities extend beyond the classroom to the students engaged in their agricultural programs. His responsibilities continue after the close of the official instructional day, nor are they terminated on week-ends and holidays. In order that he may carry out his work effectively, the principal should exercise some discretion in assigning other duties or classes to the Agriculture teacher. Where the Agriculture program is limited, he will, of course, teach other subjects.

The Place of the Agriculture Teacher

Qualifications

The key person in this Agriculture program is the Agriculture teacher. The effectiveness with which the program is taught, the degree to which it comes to be accepted in the community, and the ultimate values it will have for the students and for the community, all of these will depend in large measure upon the teacher.

Among the qualifications which a teacher of Agriculture should possess are the following:

1. Practical experience and a comprehensive training in Agriculture; a degree in Agriculture is one criterion of minimum technical background.
2. Professional training in the field of education.
3. Personal characteristics such as: Understanding and good judgment
   Tact and sincerity
   Resourcefulness and enthusiasm
   Appreciation of rural living.
   Ability to get along with others.

Responsibilities

The responsibilities of the Agriculture teacher may be grouped under three headings:

1. Responsibilities to pupils

   The teacher is teaching pupils, not Agriculture. He is teaching pupils of all kinds, advanced and retarded, well-mannered and troublesome, rich and poor. What he teaches them is important. More important still is what they learn from him. Some of the responsibilities in this connection would include:

   a. Providing a good learning environment through such things as an attractive room, a good discipline policy, an atmosphere of interest, enthusiasm, promptness, accuracy, neatness, and careful preparation.
   b. Visiting students' agricultural programs and conducting on the-farm instruction.

c. Visiting parents and students to plan and discuss the program, particularly in the case of prospective students.
d. Keeping records for evaluating and guiding student progress.
e. Giving individual help and guidance even though the problem may be only remotely connected with agriculture.
f. Helping students to secure placement on farms or to get established in farming.
g. Setting an example of good citizenship through paying attention to such things as dressing neatly and appropriately, using good English, refraining from gossip, having a sense of fair play, and participating in group or community activities.

2. Responsibilities to the school

The Agriculture teacher is an important member of the school staff. He should never allow himself to become so absorbed in his work that he loses contact with other teachers. He has responsibilities toward his profession, particularly in the field of ethics. He also has responsibilities concerning the school administration. These include:

a. Keeping accurate and up-to-date records of students' progress.
b. Planning in advance and advising the local authorities concerning the program of agriculture and the facilities required.
c. Administering tests and recording results as required.
d. Carrying out administrative policy regarding discipline, supervision, promotion, and so forth.
e. Co-operating with other teachers in such matters as pupil guidance, problem cases, and school functions.
f. Keeping records of teaching plans, test results, yearly programs, and other information in order that he may analyze and evaluate them for the future and give some guidance to his successor.

3. Responsibilities to the community

It is not suggested that the Agriculture teacher should become a sort of "service-man" for all the agriculturalists in the community. However, he should know his community and be on good terms with the people in it. It may be that he can perform some services which have an educational value as well. It is certain that if he enjoys the respect and confidence of the farmers, his teaching will be that much more effective. These responsibilities would include:

a. Studying the agriculture of the community with a view to guiding the school program and aiding in the solution of agricultural problems.
b. Visiting and getting to know the agriculturalists with a view to securing their help in making the program meaningful and effective.
c. Taking part in community activities where such do not interfere with teaching responsibilities.
d. Giving help, conducting demonstrations, and providing sources of information where such will have an educational benefit for pupils as well as community in connection with agricultural extension agents.

Suggestions for Teaching Agriculture

Preparation

There is no one method best for all situations. A variety of techniques should be used. It may prove helpful to note the following points:

1. Pay attention to such things as neatness in grooming, carefulness in speech, and friendliness and firmness in action.
2. Be prompt and well prepared at all times.
3. Adapt and select the work in terms of student experiences.
4. Aim at bringing the student from where he is to where he should be in agriculture.
5. Study and know each student and relate instruction as far as possible to his needs and abilities.
6. Concentrate on the long-term supervised agriculture phase of the program; adapt, diversify, and enlarge it, and relate classroom instruction to it.
7. Devote some time to preparing the class, arousing or motivating interest and activity.
8. Guide the development to ensure participation by everyone.
9. Avoid lecturing, "telling" and over-emphasizing factual material.
10. Carry instruction to the "doing level".
11. Utilize every opportunity for developing initiative, leadership, self-confidence, a pride in one's work, and the ability to think for oneself.
12. Follow up, evaluate, and summarize the work to see that objectives or goals have been reached.

Methods of Teaching

Among the more specific methods and techniques are the following:

1. The Problem-solving Method. The problem should be clearly defined, interesting, and meaningful. It should have sufficient scope for considerable learning activity and should not be a matter of simply assigning questions to be answered from a text.
2. The Conference Technique. It is important to secure participation by everyone, including the parents of each vocational student. Training in democratic procedure, leadership, and co-operation are important results to be gained from this method.
3. On-the-job Instruction. This should be a part of all agriculture teaching. It involves individual instruction, help, and guidance, with the emphasis on encouraging the student to think and act for himself and to offer his own solution for discussion.
4. Field Trips, other than to students' programs. These must be planned beforehand so that the students know their responsibilities as guests and the host knows what is wanted.
5. Visual Aids. These are excellent for teaching if it is remembered that they are aids, not substitutes, for the teacher.

Evaluation and Records

Testing and examining should be a co-operative enterprise for the benefit of student and teacher. It must include an evaluation of such areas of progress as personal development, knowledge, skills, and particularly agricultural practice. It will involve a combination of subjective and objective rating

Records and reports must be kept up to date and easily available. Examples of records will be found in the Appendix.

Texts and References

Under no circumstances should this become a textbook course. A library of basic references and pamphlets should be available for ready reference. It is most important that students should learn how and where and when to get information for themselves. A list of suitable references is given in the Appendix,

as well as in the course outline.

Government publications referred to by number in the course outlines are listed by title in the Appendix under the appropriate subject heading.

Suggested Guide for Evaluating Student Progress

	Term Marks	Possible Marks	
A.	Personal Development	15	
	1. Starts work promptly		
	2. Keeps himself and desk neat		
	3. Class posture and appearance		
	4. Initiative exhibited		
	5. Spells words correctly		
	6. Co-operates with classmates and with teacher		
	7. Pleasant and congenial attitude		
	8. Exhibits leadership ability		
	9. Gets to class promptly, goes immediately to seat		
	10. Talks quietly, not noisily		
B.	Factual Achievement	20	
	1. Teacher's evaluation of the quality of work and outstanding endeavor		
	2. Daily work and unit examinations		
	3. Quarter examination		
C.	Practice work, agricultural and future farmer	25	)
	1. Each approved practice written and diagrammed in the classroom by student		)
	2. Each approved practice put into effect with approval of parent and the instructor		)
	3. Planning and executing jobs connected with production project		)
	4. Planning and executing jobs connected with improvement and supplementary projects		) 65
			)
	Total	60	)
	Final Marks		)
A.	Production Project Completion	40	)
	1. Outstanding project work		
	2. Average project work		
	3. Below average project work		
B.	Term Marks	60	
	Total	100	

N. B. 65% of year's marks involve practical activities.

COURSE OUTLINES - AGRICULTURE 10

Introductory Statement

This is a first course in Agriculture and is largely introductory in nature. Additional material from Agriculture 21 may be selected as enrichment where interest and opportunities will permit.

Some instruction in elementary Farm Mechanics could be given in the shop and on the job. Consultation and co-operation with the teacher of Industrial Arts would be most desirable in preparing this phase of work.

The course outlines have been divided into eleven "segments" or areas, as follows: Farm and Ranch Life; Supervised Agriculture; Farmstead Improvement; Poultry; Vegetable Gardening; Animal Production; Farm Crop Enterprises; Soils and Soil Development; Horticulture, Small Fruits; Weeds; Individual Development.

Subject Material	Ability Development	Teaching Notes and Suggestions
Farm and Ranch Life		
1. Advantages and Disadvantages of Farm and Ranch Life. 2. The Importance of Agriculture. 3. Changes Taking Place in Agriculture	1. Appreciating the need for a study of agriculture and realizing some of its problems 2. Understanding the inter-dependence of rural and urban communities. 3. Acquiring information concerning the changes taking place in agriculture regarding: a. Improved methods of production. b. Marketing, processing, and distribution of products.	Many of the ideas and concepts, understandings and appreciations suggested in this area will best be developed through informal or incidental teaching. It is not intended that this be taught as the traditional type of "unit." However, there is a need for spending a little time introducing and discussing the course.

Subject Material	Ability Development	Teaching Notes and Suggestions
	c. Conserving natural resources.	Aids and Activities:
	d. Better conditions of farms and farm life.	1. Show films on farming and rural living.
	e. Government control and agrieultural organizations.	2. Meet some of the leading agriculturalists in the district and discuss the reasons for their success and their opinions regarding the values of agriculture.
4. Values in a Study of Agriculture.	4. Understanding and using common terms such as subsidy, mechanization, chemurgy, etc.	
5. Objectives, Organization, and Nature of the Course.	5. Obtaining a clear idea of the content, activities, and objectives of the agricultural program.	3. Discuss some outstanding problems or difficulties peculiar to the district or perhaps experienced by the parents of class members.
	6. Acquiring information concerning the various occupations in or related to agriculture.	4. Present a series of problems for report and discussion, such as: "Many of you have fathers who work for salaries in this community. In what way is this money related to the agricultural income of the community?"

References:

Deyoe, G.P.: "Getting Acquainted with Agriculture."

Beard, W.P.: "Starting to Farm." University of Missouri, Bulletin #34

"Handbook for Students of Vocational Agriculture" (Columbia, Missouri).

Subject Material	Ability Development	Teaching Notes and Suggestions
	Supervised Agriculture	
1. Study of Agricultural Enterprises Common to Community 2. Determining Essential Features of Supervised Agricultural Program. 3. Selection of Supervised Agricultural Programs.	1. Determining the advantages of a supervised agricultural experience program. 2. Understanding the nature and purpose of a supervised farm experience program. 3. Studying community enterprises. 4. Determining most suitable program, and putting into operation (only for students ready for such an undertaking.)	The work in this area should be directed toward preparing the student to conduct a supervised agricultural program of his own. Aims and Activities: 1. Review agricultural operations of other students or examine reports of student programs. 2. Review B.C. Livestock Club records on work for junior agriculturists. 3. Consult with parents of interested students. 4. Undertake some preliminary agricultural surveys.

References:

Cook, G.C.: "Handbook of Vocational Agriculture"

Beard, W.P.: "Starting to Farm."

Coffey and Jackson: "Livestock Management."

Roberts, Angerer, Moses and Gregory: "Modern Farming."

Subject Material	Ability Development	Teaching Notes and Suggestions
	Farmstead Improvement	
1. Value of a well-planned Farmstead. 2. Characteristics of a Well-landscaped Farmstead. a. Types of landscaping and uses. b. Landscape features. 3. Plants Used in Landscaping. 4. Maintenance, Repair, and Painting of Farm Buildings, Fences, etc.	1. Appreciating the value of planning and beautifying the farmstead. 2. Recognizing distinguishing characteristics and uses of formal and informal landscaping. 3. Acquiring information on the use and purpose of following features of landscaping: lawns, walk, fences, hedges, flower beds, borders, mass or group planting, windbreak, shade trees. 4. Acquiring information regarding identifying characteristics, planting and care, and the use in landscaping, of common trees, shrubs, vines, annual and perennial flowers, and lawn grasses suitable for landscaping in the community. 5. Understanding importance of repair and paint. 6. Learning how to make small repairs, and how to paint.	Aids and Activities: 1. Study farms in the community from the viewpoint of utility, appearance, and comfort. 2. Visit well-planned farms in the community. 3. Use films and pictures to illustrate the value of farmstead improvement. 4. Report on value of farmstead improvement and how the farm can be improved. 5. Study plans, pictures, and books to determine characteristics of formal and informal landscaping. 6. Draw simple plans to illustrate the formal and informal design. 7. List the suitable uses of the two styles. 8. Study landscaping features from books, diagrams, pictures, and community farmsteads to determine their use, purpose, and location in a landscaping plan.

Subject Material	Ability Development	Teaching Notes and Suggestions
		9. Study bulletins, books, etc., to determine what plants are suitable for a certain location. 10. Visit a nursery to get information on available stock. 11. Make a planting plan for home or school and carry out a planting program. 12. Make a booklet on plants studied for future reference. 13. Undertake an improvement program on the home-farm.

References:

Michigan State College: Bulletin #146, "Landscaping the Home Grounds."

Alberta Department of Agriculture: Bulletin #9, "Farmstead Planning" (1946)

Canada, Department of Agriculture: Bulletin #795

B.C. Department of Trade and Industry: Bulletin #301, "Farmstead Planning and Layout."

Michigan State College: Bulletin #146

U.S. Department of Agriculture: Bulletin #1381

Canada, Department of Agriculture: Pub. #142, 599, 713, 784, 796, 798.

Subject Material	Ability Development	Teaching Notes and Suggestions
	Poultry	
1. Factors in Selecting the Breed and Variety of Chick. a. Characteristics of the breeds of poultry. b. Housing requirements. c. Procuring the chicks. 2. Brooding and Raising Chicks. a. Brooders b. Feeding 3. Preparing Poultry for Market.	1. Understanding market demands, both local and export. 2. Making a study of each of the main breeds, its characteristics and its uses. 3. Learning the types of houses and necessary equipment. 4. Learning the kind (breed), age, sex, quality with respect to grade, disease-free, and relative economy, as well as when to buy for each specific purpose. 5. Acquiring information concerning the various sources of supply and their reputation. 6. Understanding the nature and purpose of brooding. 7. Appreciating the relative efficiency and economy of each type of brooder under local conditions. 8. Acquiring information concerning various feeds and their nutrient value. 9. Understanding the importance and value of preparing birds to meet market demands.	The main emphasis should be on breeds generally found in areas determined by survey and market demands. Aids and Activities: 1. Visit local poultry farms where possible. 2. Show that type is governed by local climatic conditions. 3. This is only elementary. Do not go into details concerning diseases. 4. Compare the cost of local birds with those from distant hatcheries. 5. Have pupils study the work of former students and inspect a home-made brooder in operation if possible. 6. Stress the importance of the correct size, type and amount of equipment for a given case. 7. Have pupils price feeds at local feed stores -- determine on paper the approximate cost of raising 100 chicks to a given age. 8. Stress importance of catering to best market, quality carcass and proper methods (minor importance).

Subject Material	Ability Development	Teaching Notes and Suggestions
4. Feeding and Management of Laying Flock.	10. Learning how to look after the laying flock.	9. This will only be taken up if some students have a project far enough advanced to require it.
5. Control of Pests and Diseases.	11. Studying diseases of young chicks — symptoms and remedies.	10. General factors of poultry sanitation and actual diseases should be dealt with in Agriculture 21.
	12. Studying various ways of keeping pests out of poultry house.	

References:

Poultry Tribune: Pictures of Breeds (Mount Morris, III.)

Canada, Department of Agriculture: "Poultry Handbook" (Ottawa)

B.C. Electric Railway Co.: "Poultry Housing" (Vancouver)

Boliver Hatcheries: "Poultry Manual" (R.R. 2, New Westminster, B.C.)

Canada, Department of Agriculture: Incubator chart, W.P.S.No.63,W.P.S.No.64,Pub.No.581,Pub.No.682,Pub.No.671

B.C. Department of Agriculture: Poultry Bulletin #107, 108

Lederle Laboratories Division, American Cyanamid Co.: "Control of Poultry Diseases."

Subject Material	Ability Development	Teaching Notes and Suggestions
	Vegetable Gardening	
1. Importance of the Vegetable Garden. 2. Planning the Vegetable Garden. a. Family requirements. b. Classification c. Varieties. d. Planting guide. e. Planting plan. 3. Location. 4. Soil Preparation. 5. Fertilizing. a. Functions of nutrients. b. Fertilizers and manures.	1. Determining the worth of the farm-home garden. a. Studying requirements of an average family (five). b. Studying types or group of vegetables based on growth habits. c. Determining varieties best suited to the area. d. Developing a planting guide covering recommended varieties, quantity to plant for average family, seed or plants needed, time to plant. e. Determining best planting plan for each student's home garden based on the planting guide. 2. Determine factors affecting location of the vegetable garden. 3. Learning most suitable methods of soil preparation. 4. Study general effects of N,P, and K in plant growth. 5. Understanding the need and value of fertilizers. a. Examining chemical fertilizers.	This area can be greatly expanded, particularly in communities where vegetable gardening is a major enterprise or in places where the only form of agriculture is in small home gardens. There is considerable opportunity for practical work. Develop this section from standpoint of amounts and costs as well as the nutritional values of fresh vegetables -- vitamins, minerals, etc. Experimental farms can provide some of this information. Aids and Activities: 1. Have students submit practical planting guide for family (five). 2. Have student submit planting plan. 3. If facilities are available, it might be possible to run pot tests as demonstrations. (Integrate with General Science 10)

Subject Material	Ability Development	Teaching Notes and Suggestions
(i) Chemical fertilizers. (ii) Barnyard manure. (iii) Green manure (iv) Composts.	b. Studying use of chemical fertilizers on garden crops at home and/or at school. 6. Determining the values and deficiencies and suitability of barnyard manure for garden crops and the use of green manure as substitutes for barnyard manure. 7. Studying value of compost and learning the general methods of preparation.	
6. Coldframes and Hotbeds. a. Purposes. b. Construction. (i) Coldframes. (ii) Hotbeds. c. Management. (i) Seeding. (ii) Watering and ventilating. (iii) Hardening off plants. (iv) Transplanting	8. Determining the uses and values of coldframes and hotbeds. Learning the general construction and operation of coldframes and hotbeds.	4. The actual construction and operation of hotbeds is to be left to Agriculture 21.

Subject Material	Ability Development	Teaching Notes and Suggestions
7. Planting and Care of the Garden.	9. Becoming familiar with implements used.	5. Making these students responsible for the home garden might be a useful introduction to the supervised agricultural program.
a. Planting.	a. Planting the home garden (or school garden.)	
b. Thinning and Training.	b. Studying value and purpose of thinning and becoming familiar with crops that require training (wire, string, stakes, trellises.)	
c. Cultivation and Weed Control.	c. Studying implements used (hoe, cultivators) and the effect of cultivation in the garden.	6. Demonstrate common implements used in cultivation and teach students how to use them properly.
d. Irrigation.	d. Studying the need for and efficient means of application of water to garden plant.	
8. Disease and Pest Control.	10. Understanding the necessity for control, general preventive, protective, and corrective measures.	7. Students could observe common insect and disease damages, and become familiar with the use of general insecticides and fungicides and possibly specific controls for a few important pests and diseases. Briefly discuss spraying and dusting.
a. Diseases.		
b. Pests.		
c. Prevention and control.		
9. Harvesting and Storage.	11. Studying the harvest schedule for general garden crops and learning how the methods of harvest are related to the specific crop.	
a. Harvesting time and storage.		
b. Storage.	a. The requirements of good storage.	
(i) Types.	b. Common means of storage.	
	c. Ideals of temperature and humidity for major garden crops.	

Subject Material	Ability Development	Teaching Notes and Suggestions
10. Exhibiting. a. Selection for exhibit b. Preparation for exhibit.	12. Knowing the characteristics of vegetables suitable for exhibiting purposes, the general methods of preparation, and the specific requirements of local prize list.	8. Students could plan an exhibition of vegetables and should attempt to make special seedings, if necessary, to have vegetables at their best stage at fair time.
11. Vegetable Seed Productions. a. Characteristics of good seed. b. Seed production methods for specific crops.	13. Knowing the characteristics of good seed, the factors affecting its quality. 14. Learning the seeds of crops which may be readily saved in home garden and the limitations and precautions necessary.	9. Students could collect seed of a few vegetables.

References:

Shoemaker, J.S.: "Vegetable Growing".

Thompson, H.C.: "Vegetable Crops".

Watts and Watts: "The Vegetable Growing Business."

Work, Paul: "Vegetable Production and Marketing".

Canada, Department of Agriculture: Pub. #816, "Vegetable Growing".

B.C. Department of Agriculture: H.C.C. #43, "Gardening on a City Lot".

Canada, Department of Agriculture: W.P.S #25, W.P.S. #27.

Canada, Department of Agriculture: Pub. #702, "Hotbeds and Cold Frames".

U.S. Department of Agriculture Film-strips: #641, "The New Gardener".
#656, "Home Grown Plants for Transplanting".
#657, "A Backyard Vegetable Garden".
#633, "Gardening Cartoons, A Dozen 'Don'ts' for Gardeners".

B.C. Field Crop and Garden Spray Calendar.

Film-strip, U S.D.A.: #503, "Insect Pests of the Garden Vegetables and Their Control".

Canada, Department of Agriculture: Pub #743, "Construction and Operation of Home Storage for Fruits and Vegetables"

B.C. Department of Agriculture: Pub A.D.C. 50, "Exhibition Standards of Perfection".

Subject Material	Ability Development	Teaching Notes and Suggestions
	Animal Production	
1. Breeds of Livestock. 2. Selection of Livestock. 3. Improvement of Breeds. 4. Feeding.	1. Recognizing common breeds of livestock and learning the reasons for their popularity. 2. Using score cards in the judging of a few common breeds of livestock. 3. Selection of suitable breed for the district. 4. Understanding grading up as a method of improving the herd. 5. Feeding the dairy calf from birth to six months. 6. Raising the veal calf to market weight. 7. Feeding pigs. a. Birth to weaning. (i) Creep feeding. (ii) Ration for nursing sow and litter. b. Weaning to market weight. (i) Growing. (ii) Fattening. (iii) Finishing.	This particular area may be expanded in places where animal production is a major enterprise or where the student has a particular interest in it. Aids and Activities: 1. Field trips: to observe various purebred breeds, to judge them, and to obtain an appreciation of differences in breeds. 2. While riding through the country, note the breeds of animals on the farms which you pass. Make a note of the number of kinds and breeds of livestock which you see. To what extent do you note that some breeds are popular in certain communities? How many different breeds can you identify on such a trip? 3. For you favorite breed of some kind of livestock, make a special study of its origin and important characteristics. Who are the outstanding breeders of the present day? What are some of the noted sires and "Families" of this breed? Where could you secure breeding stock of good quality? If possible, get started in raising some animals of this breed.

Subject Material	Ability Development	Teaching Notes and Suggestions
	c. Feeding breeding stock. (i) Feeding gilts. (ii) Feeding the pregnant sow. (iii) Feeding the breeding boar.	4. If you were to engage in farming for yourself, what kind of livestock would you raise? What factors would you consider in arriving at your choice? What breeds would you select? Why? 5. Where possible, visit a well-run dairy establishment where good calves are raised. 6. Study hazards of over-feeding, irregularity, lack of sanitation, and lack of palatability and nutritive value in calf feeds. 7. The class might make a study of rations used for various ages of hogs, noting changes in protein, fibre, and fat content. Stress importance of water as necessary nutrient.

References:

University of Illinois: "Breeds of Dairy Cattle".

Andrew, W.: "Agriculture for High Schools". 1951 (or 2)

Deyoe, G.P. and Ullrich, F.T.: "Getting Acquainted with Family Farming".

Winters: "Animal Breeding".

Fay, Ivan G.: "Animal Husbandry and Poultry".

Extension Service, Iowa State College: Circular #218, "The Brood Sow and Litter".

Subject Material	Ability Development	Teaching Notes and Suggestions
Farm Crop Enterprises		
N.B. In referring to this and the following sections it is not intended that too much detail shall be included or that treatment shall involve any great amount of technical work in laboratory study.		
1. Importance, Distribution, and Usage of: a. National, Provincial, and local importance. b. Usage of crops. 2. Identification and Characteristics. a. Classification of farm crops. b. Identification of farm crops. c. Suitable varieties for the locality. 3. Culture for the Particular Crops Studied (Field, Forage, Pasture). a. Seed selection and preparation. b. Soil preparation. c. Planting. d. Care and management.	1. Becoming familiar with major agricultural crops in the area. 2. Understanding the importance of agricultural crop production: a. To the individual farm. b. To the community. c. To the national economy. 3. Acquiring information concerning the name, characteristics, and suitability of various farm crop enterprises. 4. Learning the correct procedures and factors involved in the culture of particular crops of importance to the district.	Some work in this area has been undertaken in Agriculture 10. If so, there should be a general review of fundamental principles. If not, this should take the form of an introduction to the main types of field crops (cereals, grasses, and legumes), with particular emphasis upon recognition of common varieties of roots and tubers adapted to the locality. The student is expected to acquire the skills and abilities needed to produce root crops and tubers, with particular reference to: a. Selection of good seed. b. Treatment for disease. c. Selection and preparation of soil. d. Preparation and application of spray materials. e. Roguing. f. Identification and control of particular diseases and pests. Suggested integration with Agriculture 22 (farm mechanics): a. General check-up of machinery and replacement of worn-out parts, e.g., sharp-plough shears.

Subject Material	Ability Development	Teaching Notes and Suggestions
e. Harvesting and marketing. f. Storage. g. Insect pests, diseases, weeds.		b. Machinery adjustment, ploughs, harrows, one-ways. c. Tractor maintenance (air and oil filters). d. Seeders (cleaning, adjustments). e. Cultivators (sharpening, adjustment, use of different types). f. Spray machinery adjustment. This area should be considerably expanded for vocational students, particularly in cases where agricultural crop enterprises are being planned for inclusion on the students' supervised agricultural program. Aids and Activities: 1. Define agricultural crops. List crops of national and provincial importance. 2. Conduct a local survey of agricultural crops. 3. Discuss the importance of farm crops in terms of human consumption, animal consumption, by-products. 4. Name various species in each division of field crops. 5. Be able to recognize tubers and root crops. 6. What are the recommended varieties of tubers and root crops for the district?

Subject Material	Ability Development	Teaching Notes and Suggestions
		7. What is the importance of good seed and seed treatment? 8. Discuss germination tests. 9. Study and practise good methods of soil preparation and fertilization for tubers and root crops (vocational students particularly). 10. Study planting under such aspects as time, manner, rate, depth, distance, planting machinery for tubers and root crops. 11. What is the importance of each of the following: moisture, drainage, irrigation, cultivation, roguing, crop rotations? 12. Demonstrate and practise harvesting, noting methods and machinery. 13. Investigate the common pests and diseases of root crops and methods of weed control.
4. Crop Judging and Exhibiting.	5. Ability to judge roots, using score cards. 6. Preparing for exhibition.	The main purpose of this section is to give the student a good introduction to what constitutes quality in root crops. It should include particular reference to: a. Grading. b. Selection for show. c. Exhibition.

References:

Deyoe, G.P., and Ullrich, F.T.: "Getting Acquainted with Agriculture".

Ready, J.C.: "A Manual of Canadian Agriculture".

Fay, I.G.: "A Workbook in Field Crops and Soils".

Ontario Agricultural College: Bulletin #418, #425.

Fergus, E.N., and Hammonds, C.: "Field Crops Management".

Martin and Leonard: "Field Crops Management".

English, R.E.: "Farming in Alberta".

University of Alberta, "Soil Zones in Alberta".

University of Alberta Bulletin #56, "Soil Erosion in Alberta."

Line Elevator Ass'n.: "Water Erosion of Soils in the Prairie Provinces and its Control".

Dungan, G.H. and Balin, O.H.: "Judging Crop Quality".

See also references listed for "Vegetable Growing".

Subject Material	Ability Development	Teaching Notes and Suggestions
Soils and Soil Development		
1. Importance of Soil.	1. Understanding of the part played by soil in life of present and past generations.	Some of this material must be taught or at least repeated incidentally in connection with field trips or supervised agricultural programs. There is a place, however, for gathering the fundamental facts and concepts together and studying them as a separate area. The following suggestions may prove helpful.
2. Formation and Classification of Soils. a. Soil zones in Alberta.	2. Knowing the structure and classes of soils. a. Determining the importance of soil zones in Alberta agriculture. b. Need for soil conservation in Alberta.	1. Avoid too much detail on the structure, formation and analysis of soils. Keep the discussion on simple, practical terms at this stage. Study samples of local soils. Invite local district agriculturalist to give a talk on soil. Grow plants in different soils. Grow plants in (a) top soil, (b) sub soil. Construct erosion tables -- sod-covered, bare soil -- see Canadian Nature Magazine.
3. Soil Fertility. a. Types of Fertilizers. b. Methods of application.	3. Ability to recognize soil depletion and knowledge of procedures for restoring fertility. a. Commercial fertilizers. 4. Ability to apply fertilizers, with a knowledge of the different methods, their advantages and disadvantages, and the specific reasons for applying them in that particular manner. a. Drilling. b. Broadcasting. c. Use of lime spreaders and other commercial machinery.	2. Relate as directly as possible to the area on conservation problems and the areas on crop and livestock production. 3. Integrate with Agriculture 22 (farm mechanics) in such activities as: a. Construction of covered manure sheds. b. Demonstration, care, and maintenance of different types of fertilizer application machinery

Subject Material	Ability Development	Teaching Notes and Suggestions
4. Soil Management. a. Crop rotation. b. Keeping the soil in good condition.	5. Understanding crop rotation and its values. 6. Planning and carrying out crop rotation. 7. Knowing and practising the methods of cultivating. 8. Understanding the importance of maintaining organic matter, soil moisture, etc.	c. Display of different types of cultivators with demonstration of where and how they should be used. 4. Use experimental plots with various types of fertilizers and various crops. 5. Discuss the value of proper storage and application of barnyard manure.
5. Soil Conservation (Fertility). a. Problem of conservation. b. Methods of conservation. c. Relations of conservation to natural resources.	9. Determining the detrimental effects of leaching, the areas where it is most prevalent, indications of leaching and the various means by which it can be checked. Indicate the detrimental effects of "single cropping" as opposed to crop rotations. 10. Realizing how essential it is to supplement soil with different elements consistently removed from the soil by cropping and leaching. (These are mainly supplemented by commercial fertilizers and manures.) 11. Understanding how crop rotations are an economical manner of keeping the soil at its optimum nutrient level. 12. Knowing why and when commercial fertilizers and manure will supplement a crop rotation.	6. Check supervised farming programs (or plans) to see that approved practices are being followed. 7. Determine the water-retaining power and the organic matter content of soils. 8. Set up different experiments whereby it can be shown through different amounts of leaching with the various soils. 9. Consider the fertilizer requirements for one or two of the local crops.

Subject Material	Ability Development	Teaching Notes and Suggestions
	13. Appreciating the value in the reclamation of marginal lands and realizing the extent that reclamation can be carried out.	

References:

Kellog, C.E.: "The Soils That Support Us".

Millar and Turk: "Fundamentals of Soil Science".

Worthen, E.L.: "Farm Soils".

Thorne and Peterson: "Irrigation Soils".

Canada, Department of Agriculture: Pub. #720, 568, 819, 583.

See also Soil Survey Reports.

B.C. Department of Agriculture: F.C.C. 11, F.C.C. 5, H.C. 51, H.C. 53, Cir. 76.

Subject Material	Ability Development	Teaching Notes and Suggestions
Horticulture - Small Fruits		
1. a. Importance of Small Fruits. (i) Locally (ii) Generally b. Local possibilities.	1. Determine the extent of local small-fruit production and relate to local, national, and world production. 2. Determine reasons for or against small-fruit production locally, (Consider soil, climate, markets, etc.)	The student should have an appreciation of the importance of the local production of small fruits in relation to the total agricultural production locally and nationally. <u>Aids and Activities:</u> 1. Make a survey of the local area to determine approximate acreages in small fruits, the varieties of small fruits grown successfully, and the value of the crop. 2. Students may make graphs showing acreage in B.C. in small fruits over a period of years to get a picture of the trends in this field. 3. Students should not be required to memorize detailed statistics. 4. Compare local conditions with what you consider ideal conditions for small fruit production.
2. Establishing a Small-fruit Enterprise. a. Choice of site. b. Selection of suitable kinds and varieties.	3. Determine the factors which should be considered in the choice of a site. 4. Find out what kinds and varieties are suited to the local area.	5. Visit a well-planned small-fruit enterprise. Note the kinds and varieties used, the spacing of the plants in the rows and between the rows, and the suitability of the site for the particular crop.

Subject Material	Ability Development	Teaching Notes and Suggestions
c. Selection of suitable stock. d. Setting the plants.	5. Learn the advantages and disadvantages of nursery-grown and home-grown stock 6. Find out what methods of setting plants have proven successful in the local area.	6. Demonstrate and have the students practice setting out one or more kinds of small-fruit plants. 7. Determine the cost of buying and planting one acre of a particular small fruit.
3. Management a. Fertilizer practices. b. Pruning and/or training. c. Cultivation. d. Spraying and dusting. e. Irrigation practices. f. Plant propagation.	7. Determine the approved fertilizer practices for various types of small fruits in the local areas. 8. Study the approved pruning and training methods employed for various types of small fruits. 9. Find out what cultivation methods are being used successfully in the area. 10. Find out what sprays and dusts are recommended. 11. Find out what irrigation practices have been used successfully in the area. 12. Find out by what methods the common small fruits are propagated.	This section introduces and provides a working knowledge of the management problems of a small fruit enterprise. It is suggested that considerable study should be devoted to this phase of the work, particularly in the case of vocational students whose programs include small-fruits enterprises. Much of the instruction in this unit should be given "in the field" if possible.
4. Handling the Fruit. a. Picking. b. Packing and grading.	13. Lean the proper method of picking the various small fruits. 14. Determine suitable degree of ripeness for home use and for market.	The student should obtain a knowledge of the problems involved in harvesting and marketing small fruits and acquire some skills needed for these.

Subject Material	Ability Development	Teaching Notes and Suggestions
c. Storage. d. Marketing.	15. Find out what sizes and types of containers are used for picking and shipping the various small fruits. 16. Find out in what ways the fruit may be stored (freezing, SO_2. etc.) 17. Determine the disposition of the local crop.	8. Obtain one of each of the crates used for marketing small fruits. Discuss the reasons for the shapes and sizes used. 9. Visit a local cannery if possible. 10. Make suitable picking trays for holding several berry boxes.

References:

Canada Year Book

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B. C. Department of Agriculture: H.C. 54, H.C. 55, H.C. 56, H.C. 57, H.C. 58, H.C. 33, H.C. 64, Small Fruits, Spary Calendar, Fertilizer Recommendations for B.C. Canada, Dept. of Agriculture: Pub. No. 838, Pub. No. 754, Pub. No. 836, Pub. No. 810.

Subject Material	Ability Development	Teaching Notes and Suggestions
	Weeds	
1. Definition and Importance 2. Weed Control	1. A knowledge and understanding of weeds and an ability to recognize common types. 2. Knowing how weeds are spread and how to differentiate between native and introduced weeds. 3. An understanding and appreciation of the damage done by weeds: a. Loss of moisture. b. Depletion of nutrients. c. Poisonous weeds. d. Pest harbouring. e. Land wastage. 4. An appreciation of local and national losses caused by weeds. a. Economic losses. b. Losses as a result of dockage. 5. A knowledge and ability to prevent weeds. a. Clean seed.	The value of this area of instruction will partly depend upon the need and interest it has for the student. It should not become a mere academic dissertation upon weeds in general. It should be directly related to community problems and, if possible, to some supervised agricultural programs (perhaps those of senior vocational students). Some integration might be made with Science 10. Emphasis could be placed on special adaptation of weeds which facilitate their spread. It should be made clear that these have made the weed problem more serious than in former times. Aids and Activities: 1. If possible, visit a field where no weed control has been practised. Compare with cleanly cultivated fields. 2. Arrange a talk by the weed inspector for information on local problems. 3. Discuss the importance of preventing the spread of weeds. 4. Demonstrate the machinery commonly used in controlling weeds 'Agriculture 22'

Subject Material	Ability Development	Teaching Notes and Suggestions
	b. Certified seed. c. Crop rotation. d. Clean cultivation. e. Proper handling of manure.	5. Demonstrate the operation of weed sprayers and discuss the functions of some of the new weedicides (Agriculture 22).
	6. A knowledge of methods of mechanical control of weeds. a. Cultivation. b. Types of cultivation. c. Implements. d. Burning and flame guns. e. Hand weeding.	
	7. A knowledge of some of the methods of chemical control. a. Sprays and dusts for various crops. b. Time, rates, and methods of application. c. Mixtures for control of disease and insects in co-ordination with weed sprays and dusts.	
	8. An appreciation of biological control (grazing.)	

References:

B.C. Department of Agriculture: Bul. No. 106.

Queen's Printer: "Farm Weeds of Canada" (colored plates) (Ottawa).

Ontario Agricultural College: Circular 75, "Chemical Weed Killers".

Subject Material	Ability Development	Teaching Notes and Suggestions
	Individual Development.	
1. Self-expression. 2. Citizenship	1. Ability in public speaking. 2. Understanding parliamentary procedure. 3. Ability to report on project work and other agricultural topics. 4. An appreciation of citizenship through a study of the function of fairs and other agricultural displays in the community. 5. An appreciation of the rights and privileges of others developed through active participation in group work.	It has been pointed out that the aim of agriculture education is not only to train farmers but also to develop individuals and train citizens. It is felt, therefore, that some attention should be given in the agriculture classes to training for citizenship. This can be particularly effective when it is given in a somewhat vocational environment. Whether it is given in a separate area - individual development - or whether it is given informally, there should be considerable reference to the matter of individual development. Aids and Activities: 1. Relate to Effective Living sections on parliamentary procedure, understanding other people, etc. 2. Spend some extra time with vocational students in planning and conducting group projects, debates, forums, etc.

References:

Reager, R.C.: "You Can Speak Well".

See also references for Effective Living

APPENDIX A: CONSERVATION

Soil

I. All Life Depends on Fertile Soil

1. Man depends on plants and animals, which in turn depend on soil.
2. All other renewable resources depend on soil.
3. Loss of soil productivity affects everyone.

II. Quality and Quantity of Life Depends on Productivity of Soil.

1. Some soil-types are inherently better than others for supporting life.
2. Healthy soil makes healthy people.

III. Soil Productivity is Being Reduced By:

1. Movement of soil particles by water and wind (erosion).
2. Removal of plant food by run-off water (leaching).
3. Removal of plant growth by man (harvest).

IV. What Can Be Done to Increase Productivity?

1. Use land according to its best adaptations.
2. Add organic matter to maintain or improve soil structure.
3. Maintain proper balance by use of fertilizers (products from sewage - disposal plants, etc.).
4. Establish needed mechanical measures to control movement of soil and water (strip cropping, contour tillage, irrigation, diversion ditches, farm ponds, drainage, reforestation, grassing, etc.).

V. What I Can Do to Help Stop the Waste:

1. Lean the principles of soil conservation.
2. Analyze my own community needs.
3. Encourage public interest.
4. Secure technical aid and apply needed measures.
5. Support conservation programs.

Water

I. All Life Needs Water.

1. Plant and animal life depend on soil, which is unable to function without water.
2. Water itself is a food and a carrier of other nutrients.
3. Bodies of plants and animals consist principally of water. Man himself consists of 70 per cent water.
4. It takes about 500 pounds of water to produce 1 pound of dry matter.

II. Availability of Usable Water Is Necessary For:

1. Adequate drinking supply.
2. Raising living standards.
3. Support of many industries.
4. Recreation.

III. Water Is Being Wasted By:

1. Rainfall run-off.
2. Unwise use.
   (a) Removal of vegetation.
   (b) Poor farming methods.
   (c) Ill-advised drainage.
   (d) Industrial misuse.

IV. How We Can Use Our Water More Wisely:

1. Build up our underground water supply.
   (a) Use land more wisely.
   (b) Improve vegetative cover.
2. Store excess water for time of need
3. Reduce pollution.

V What I Can Do to Stop the Waste:

1. Learn principles of water management; recognize relation to soil management.
2. Encourage public interest.
3. Analyze my community needs.
   (a) Drinking-water.
   (b) Agricultural requirements.
   (c) Industrial needs.
   (d) Sewage-disposal.
   (e) Pollution.
4. Support conservation programs.

Forests

I Forests Are Basically Important to Soil, Water, Wild Life.

1. Reduce soil erosion.
   (a) Cushion raindrop impact.
   (b) Retard water run-off.
   (c) Absorb water.
   (d) Roots bind soil.
2. Store water underground.
3. Furnish a home for wild life.

II. Forests Are Basically Important to Man.

1. Raw materials -- lumber, pulpwood, fuel, etc.
2. Protection for water supply.
3. Recreational areas.
4. Food (nuts, maple products, game, etc.).

III. Forests Are Being Wasted

1. Unwise cutting practices.
2. Failure to harvest mature timber
3. Grazing livestock in wood-lots
4. Fire.
5. Insects and disease.

IV. What Can Be Done to Improve Forest Conservation?

1. Improve forest and wood-lot management
2. Improve fire and pest control methods.
3. Reforest suitable land.

V. What I Can Do to Stop the Waste and Produce More Forests:

1. Help reforest abandoned land and pastures.
2. Prevent forest fires by being careful.
3. Get forestry advice before cutting timber.
4. Report insect and disease trouble.
5. Support or co-operate with Forest Practice Act.
6. Help preserve natural beauty.
7. Fence cattle out of wood-lots.
8. Encourage others to understand good forestry.

Fish and Wild Life

I. Wild Life Is Valuable to the Ever-changing Balance of Nature.

1. An essential part of many food chains.
2. Pollination of many plants depends upon insects.
3. Dispersal of many seeds depends on birds and mammals.

II. Wild Life Is Valuable to Man.

1. Economic.
   (a) Aid in agriculture.
   (b) Crop of fur and food.
   (c) Tourist trade.
2. Recreation.
3. Aesthetic.

III. Fish and Wild Life Are Being Depleted.

1. Increased demand on supply.
2. Habitat destruction.
3. Pollution.
4. Violation of laws.
5. Lack of public understanding.

IV. What Can Be Done to Better the Wild-life Picture?

1. Better public understanding.
2. Fire prevention.
3. Improve forest cutting practices.
4. Food and cover planting and reforestation.
5. Pollution abatement.
6. Stream improvement.
7. Artificial propagation.
8. Legislation.
9. Proper harvest.
10. Proper predator control.

V. What I Can Do to Help Better the Wild-life Picture:

1. Abide by laws and report violators.
2. Study local needs and support local conservation groups.
3. Better sewage-disposal.
4. Control grass and brush fires.

5. Plant trees and shrubs for food and cover.
6. Feed wild life in winter.
7. Help improve streams.

APPENDIX B: REFERENCES AND TEACHING AIDS

Teachers' References

Agriculture 10, 21 and 31

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REFERENCE BULLETINS AND CIRCULARS

(July, 1952)

Publications of the Alberta Department of Agriculture, of the Alberta Department of Public Health, of the University Department of Extension, and of the Canada Department of Agriculture will be available to schools offering the Grade X option in Agriculture through the Curriculum Branch of the Department of Education. These publications so supplied are to remain the property of the school and are not to be distributed to the pupils. REQUESTS FOR THESE PUBLICATIONS SHOULD BE DIRECTED TO THE CURRICULUM BRANCH, DEPARTMENT OF EDUCATION, EDMONTON, ALBERTA. These publications will be issued in limited quantities, and the teacher should specify the number required; ten copies of any publication will be the maximum supplied by the Department under ordinary circumstances. Teachers will be supplied with current lists of available publications of the above authorities; teachers may also secure lists of available materials from the Extension Department, University of Saskatchewan, Saskatoon, the Department of Extension, University of Manitoba and the Information Service, United States Department of Agriculture, Washington, D.C.

I. AGRICULTURAL ECONOMICS

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Land Settlement in Northeastern Alberta, 1943	Pub. No. 800
Land Use Classification in the Special Areas of Alberta	Pub. No. 731
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Life Insurance Experience of Saskatchewan Farmers	Pub. No. 831

II. AGRICULTURAL ENGINEERING

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Alberta Department of Agriculture

Cement-Sawdust Concrete	Mimeograph
Emergency Grain Storage	"
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Ventilation for Barns	"

Canada Department of Agriculture

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Pig Brooder, The Hexagonal	W.P.S. No. 11
Root Cellar, A Practical Farm	Pub. No. 708
Silo Construction	Pam. No. 118

2. Machinery and Equipment

Alberta Department of Agriculture

Farm Grain Dryer	Mimeograph
Home-made Electric Pig Brooder	Leaflet 80
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Poultry Catching Crate	Leaflet 54
Wire Size for 110 or 32 Volt Installations	Mimeograph

Canada Department of Agriculture

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Farm Trailers, Wagons and Racks	Pub. No. 830
Mechanical Spreaders for Grasshopper Bait	Pub. No. 606
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Ropework on the Farm	" 9
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3 General

Alberta Department of Agriculture

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How to Measure Hay in the Stack	Mimeograph
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Attention, Cream Producers!	----------
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Cottage Cheese	"
Cow Testing and Dairy Herd Records	----------
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University of Alberta

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Canada Department of Agriculture

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University of Alberta

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2. Ornamentals

Alberta Department of Agriculture

Caragana	Leaflet
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1. Crop

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Ergot Disease of Rye and Other Grains and Grasses	Pub. No. 636
Grain Mites, Control of	W.P.S. No. 46
Insects Attacking the Potato (Illustrated Booklet)	
Insects of the Flower Garden and Their Control (Illustrated) (Obtainable only from the Queen's Printer. Price 25¢)	Bul. No. 99
Mechanical Spreaders for Grasshopper Bait	Pub. No. 606
Plums, Diseases of and Their Control	Pub. No. 532
Potato Diseases (Illustrated Chart)	
Potatoes, Bacterial Ring Rot of (Illustrated Chart)	
Potato Wart (canker)	Poster
Rose Chafer, The	Pub. No. 688
Rust, Sulphur Dusting of Grain Plots for Control of	Pam. No. 132
Smut-Free Seed, The Production of	Pub. No. 490
Stem Eelworm of Narcissi (Tylenchus dipsaci) (Kuhn Bastian)	Pam. No. 144
Tomato Diseases	Pub. No. 759
Tomatoes, Prevention of Virus Diseases of Greenhouse-grown.	Pub. No. 552
Treatment of Cereal Seed	Pub. No. 834
Turnips, Brown-Heart of	Pub. No. 574
Wheat Stem Rust, A Study of the Effect of Environmental Factors on the Variability of Physiologic	

Forms of Puccinia Graminis Tritici (technical)	Bul. No. 140
Wheat Stem Rust, Puccinia Graminis Tritici, in Canada, Specialization and Hybridization of (technical)	Bul. No. 160
White Grubs, Control of	W.P.S. No. 39

University of Alberta

Insect Pests of Grain	Bulletin 24

Line Elevator Farm Service

Field Crop Insects	Bulletin 5

2. Trees and Shrubs

Canada Department of Agriculture

Annual Report of Forest Insect Survey	Report
Bark Beetles, Canadian (technical) (Obtainable only from the Queen's Printer. Price 75¢)	Bul. No. 14
Cerambycid Larvae, North American. (technical) (Obtainable only from the Queen's Printer. Price $1)	Bul. No. 27
Upper Fraser Region of B.C. (technical)	Pub. No. 804

3. Household

Canada Department of Agriculture

Household Insects and Their Control (Illustrated) (Obtainable only from the Queen's Printer. Price 25¢)	Pub. No. 642
Household Insects, Control of Some Common Species of	Pub. No. 637
Mosquito Control in Canada	Pub. No. 719
Paralysis Tick--its Life History and Control	Pub. No. 692
Rats and Mice, Control of	W.P.S. No. 33

University of Alberta

Methods of Controlling Insect Pests in the Home	Leaflet 19

Alberta Department of Public Health

Cockroach Control	E. D. 12
Control of Bedbugs in the Home	E. D. 2
Flea Control	E. D. 7
Housefly Control	E. D. 5
Spotted Fever Tick in Alberta	A.P.H.S. 4
Tick Borne Diseases of Man and Methods of Prevention	A.P.H.S. 3
Tularaemia	A.P.H.S. 15
Rocky Mountain Spotted Fever	A.P.H.S. 14

Reprints:

Richardson's Ground Squirrel, Citellus Richardsonii Sabine, in Southern Alberta: Its Importance and Control (Sc. Agri. 24:4 Dec. 1943)

Rocky Mountain Spotted Fever Tick in Alberta (Can. Jour. Pub. Health, Mar. 1952)

The Spotted Fever and Other Alberta Ticks (Can. Jour. Res. D, 22:36-51. 1944)

Tularaemia: a Report on Forty Cases in Alberta, Canada, 1931-1944 (Am. Jour. Pub. Health, 36:5. May, 1946)

4. Livestock

Alberta Department of Agriculture

Bang's Disease	**Bulletin 84**
Diseases of Suckling Pigs	Leaflet
Infectious Rhinitis	----------
Mastitis -- Prevention and Control	----------
Worms in Swine, Sodium Fluoride in Treatment of	Leaflet
Directions and Precautions for Using Coyote-Getters	----------
Weeds Poisonous to Livestock	----------

Canada Department of Agriculture

Chicks, Methods of Controlling Caecal Coccidiosis of	Pub. No. 788
Control of External Parasites of Poultry and Control of Mites and Lice on the Poultry Plant	Pub. No. 675
Disease in Sheep, Prevention of	W.P.S. No. 67
Hog Cholera	Pub. No. 655
Insects and Related Parasites Injurious to Livestock and Poultry	Pub. No. 604
Parasites of Horses	Pub. No. 607
Stomach Worms in Sheep in Eastern Canada, The Control of	Pub. No. 639
Warbles or Heel Flies, Control of Cattle	W.P.S. No. 70

Alberta Department of Public Health (See 3. Household)

5. Poultry

Alberta Department of Agriculture

Cecal Coccidiosis	Leaflet 31
Disorders of the Cloaca and Vent	" 36
External Parasites of Poultry	
Fowl Paralysis and Leukemia	" 37
Internal Parasites of Poultry	" 30
Pullorum Diseases of Poultry	" 25
Respiratory Diseases of Poultry	" 32
Tuberculosis of Poultry	" 28

Canada Department of Agriculture

Chicks, Methods of Controlling Caecal Coccidiosis of	Pub. No. 788
Control of External Parasites of Poultry and Control of Mites and Lice on the Poultry Plant	Pub. No. 675
Insects and Related Parasites Injurious to Livestock and Poultry	Pub. No. 604

6. General

Canada Department of Agriculture

Collecting and Preserving Insects, Directions for	Pub. No. 520
Siphonaptera of Canada, The (technical)	Bul. No. 817

University of Alberta

Ant Control	Leaflet 15
Application of Poisoned Dusts	Leaflet 6
Contact Insecticides	Leaflet 6a

Alberta Department of Public Health

Flea Control	7
Housefly Control	E. D. 5
Mosquito Control	6
Alberta: The Only Rat-free Province in Canada	(Reprint)

VII. LIVESTOCK

1. Cattle

Alberta Department of Agriculture

Bang's Disease	Bulletin 84
Bloat in Cattle and Sheep	Mimeograph
Mastitis, Prevention and Control	----------
Melilot Taint	Leaflet 21

Canadian Department of Agriculture

Boys' and Girls' Calf Club, Members Handbook	
Canadian Record of Performance for Purebred Dairy Cattle	Report
Cattle Ranching in Western Canada	Pub. No. 778
Feeding Dairy Cattle	W.P.S. No. 80
Feedlot Finishing of Cattle and Sheep in Irrigated Areas of Southern Alberta	Pub. No. 786
Selling Cattle by Carcass Grade and Weight, The Practicability of	Report
Warbles or Heel Flies, Control of Cattle	W.P.S. No. 70
White Scour in Calves	W.P.S. No. 35

2. Foxes and Mink

Canada Department of Agriculture

Genetics of Some New Type Foxes (technical)	Pub. No. 768
Live Virus-Vaccine as a Means of Preventing Distemper on Fox and Mink Farms, Use and Possible Effects of	Pub. No. 649
Skin Scabies or Mange of the Fox	Pub. No. 502
Live Virus-Vaccine as a Means of Preventing Distemper on Fox and Mink Farms, Use and Possible Effects of	Pub. No. 649
Mink Ranching	Pub. No. 827

3. Goats

Canada Department of Agriculture

Milk Goat in Canada, The	Pub. No. 763

4. Horses

Canada Department of Agriculture

Feeding of Horses, The	Pub. No. 656
Parasites of Horses	Pub. No. 607

5. Rabbits, Hares, Chinchillas

British Columbia Department of Agriculture

Practical Rabbit Raising	P. B. B. 3

Canada Department of Agriculture (Send for list)

6 Sheep

Alberta Department of Agriculture

Bloat in Cattle and Sheep	Mimeograph
Care of Wool at Shearing Time	----------

Canada Department of Agriculture

Breeding, Feeding and Housing of Sheep	W.P.S. No. 71
Bulldog-Jaw and Parrot-Mouth Defects of Sheep	Pub. No. 588
Disease in Sheep, Prevention of	W.P.S. No. 67
Feedlot Finishing of Cattle and Sheep in Irrigated Areas of Southern Alberta	Pub. No. 786
Karakul (Fur-Bearing) Sheep and Persian Lamb Fur Production	Pub. No. 654
Lambs, Fattening Range and Domestic Feeder	Folder
Production and Marketing of Wool	W.P.S. No. 68
Sheep Dipping	Pub. No. 614
Sheep Ranching Industry in Western Canada, An Economic Analysis of	Pub. No. 551
Stomach Worms in Sheep in Eastern Canada, The Control of	Pub. No. 639

7. Swine

Alberta Department of Agriculture, (See 4. Livestock)

Canada Department of Agriculture

Carcass Grading of Hogs, The	W.P.S. No. 48
Feeding of Swine	W.P.S. No. 5
Hog Cabin, The All-Year	Pub. No. 618
Hog Cholera	Pub. No. 655
Hogs, Self-Feeder for	Pub. No. 601
Keeping Pigs Healthy (Western Canada Edition)	Pub. No. 755
Pig Brooder, The Hexagonal	W.P.S. No. 11
Prevention of Common Losses in Young Pigs	W.P.S. No. 34
Study of the Dressed Hog	Pub. No. 542
Swine Feeding Experiments at the Dominion Experimental Farm, Agassiz, B.C.	Pub. No. 852
Swine Production	Pub. No. 686
Tankage, Its Value in Swine Feeding	Pub. No. 727
Testing Swedish Landrace Swine in Canada	Pub. No. 801

Vitamin "A" in Swine Feeding	Pub. No. 736
Whey as a Feed for Hogs	W.P.S. No. 76

8. General

Alberta Department of Agriculture

Weeds Poisonous to Livestock	

Canada Department of Agriculture

Barley in Livestock Feeding, Greater Use of	Pam. No. 127
Better Pastures in Eastern Canada	Pub. No. 809
Farming in Canada	Booklet
Health Protection for Canadian Farm Animals	W.P.S. No. 38
Insects and Related Parasites Injurious to Livestock and Poultry	Pub. No. 604
Livestock Bruising	Poster
Livestock, Direct Marketing of	Pub. No. 726
Meat and Bone by-Products	Bul. No. 49
Oat Hulls and Their Use in Feeding Stuffs	Cir. No. 11
Paralysis Tick--its Life History and Control	Pub. No. 692
Wheat as a Feed for Livestock	W.P.S. No. 60

VIII. PLANTS AND PLANT PRODUCTS

1. Field Crops

Alberta Department of Agriculture

A Guide to Potato Production under Irrigation	Bulletin 2
Production of Field Peas in Alberta	Circular 78
Rye in Alberta	Mimeograph
Varieties of Grain for Alberta	(Annual)

Canada Department of Agriculture

Barley in Canada	
Cereal Crops, Take-All--A Root-rot of	Pub. No. 485
Cereal, Forage and Fibre Crops, Control Methods for Diseases of	Pam. No. 123
Cereals, Root-rots of	Pub. No. 699
Cereals, Stem Rust of	Pub. No. 666
Corn Growing in Manitoba	Bul. No. 121
Cost of Producing Farm Crops in the Prairie Provinces	Bul. No. 159
Ergot Disease of Rye and Other Grains and Grasses	Pub. No. 636
Field Roots	Pub. No. 672
Flaxseed in Canada, Production of	Pub. No. 545
Grain, The Best Varieties of	Pub. No. 701
Insects Attacking the Potato (Illustrated Booklet)	
Late Blight of Potatoes and its Control	Pub. No. 837
Legume Inoculation	Bul. No. 157
Oats in Canada	Pub. No. 554
Oats, Vanguard	Pub. No. 651
Potato Culture	W.P.S. No. 40
Potato Diseases (Illustrated Chart)	
Potatoes, Bacterial Ring Rot of (Illustrated Chart)	
Potatoes for Livestock	Pub. No. 818

Potatoes, Low Temperature Injury to Late Harvested Potato Leaflet	Pub. No. 593
Potato Rot Nematode	Wall Chart
Potato Wart (canker)	Poster
Rust, Sulphur Dusting of Grain Plots for Control of Sunflower Production for Grain	W.P.S. No. 69
Wheat, Canadian Spring, Varieties of	Pub. No. 538
Wheat Stem Rust, a Study of the Effect of Environmental Factors on the Variability of Physiologic Forms of Puccinia Graminis Tritici (technical)	Bul. No. 140
Wheat Stem Rust, Puccinia Graminis Tritici, in Canada, Specialization and Hybridization of (technical)	Bul. No. 160
Wheat, The Control of Loose Smut in	Cir. No. 66
Winter Wheat Varieties and Their Production in Alberta	Pub. No. 799

Alberta Wheat Pool

The Story of Wheat

2. Fodder and Pasture Plants

Alberta Department of Agriculture

Creeping Red Fescue	Cir. No. 7
Silage in Alberta	Mimeograph

Canada Department of Agriculture

Alfalfa for Hay, Silage and Pasture	Pub. No. 735
Alfalfa Hay for Meal Production, High Quality	W.P.S. No. 81
Chemical Composition of Native Forage Plants of Southern Alberta and Saskatchewan in Relation to Grazing Practices, The (technical)	Pub. No. 769
Ecological and Grazing Capacity Study of Native Grass Pasture in Southern Alberta, Saskatchewan and Manitoba	Pub. No. 738
Effects of Climate and Grazing Practices on Short Grass Prairie Vegetation, The (technical)	Pub. No. 747
Fodder and Pasture Plants (colored plates) (Obtainable only from the Queen's Printer. Price $1)	
Hay and Pasture, Crested Wheat Grass for	Pub. No. 557
Haymaking With Crested Wheatgrass in the Dry Areas of Alberta	Pub. No. 753
Hays and Haymaking in the Prairie Provinces	Pub. No. 722
Identification of Certain Native and Naturalized Grasses by Their Vegetative Characters, The (technical)	Pub. No. 762
Ladino Clover	Pub. No. 845
Legume Inoculation	Pub. No. 835
Making Grass and Legume Silage Wheat Preservatives	W.P.S. No. 66
Pasture Crops and Pasture Practices for Central Alberta, Improved	Pub. No. 693
Pasture Improvement for Cheaper Production (Prairie Provinces)	W.P.S. No. 56
Reed Canary Grass	Pub. No. 805
Roots in Canada, Field	Pub. No. 672
Silage Production	Pub. No. 525

Turnips, Brown-Heart of	Pub. No. 574
Turnips, Diseases of Swede	W.P.S. No. 24
White Clover in Canada	W.P.S. No. 53

3. Seed

Alberta Department of Agriculture

Harvesting Alsike Clover Seed	Mimeograph
Hints for Growers of Registered and Certified Seed Grain	Mimeograph
Preparation of Seed for Exhibition	Mimeograph

Canada Department of Agriculture

Control of Insects in Stored Grain	W.P.S. No. 14
Good Seed and Its Significance	W.P.S. No. 29
Grain Mites, Control of	W.P.S. No. 46
Smut-Free Seed, The Production of	Pub. No. 490
Treatment of Cereal Seed	Pub. No. 834

4 Weeds

Alberta Department of Agriculture

Weeds Poisonous to Livestock	
Control of Canada Thistle and Sow Thistle	Circular 76
Control of Hoary Cress	Leaflet
Control of Leafy Spurge	Leaflet
Control of Toad Flax	Leaflet
Suggestions for the Use of Sodium Chlorate	Leaflet
Colored Weed Posters	Mimeograph

Canada Department of Agriculture

Couch Grass in Manitoba, Control of	Pub. No. 765
Farm Weeds of Canada (colored plates) (Obtainable only from the Queen's Printer. Price $2)	
Horsetail, a Horse-Poisoning Weed	Cir. No. 74
Leafy Spurge, Eradication of	Pub. No. 710
Simplifying 2,4-D	Pub. No. 807
Weed Seeds (sets of 36 colored plates)	
Cruciferae	
Compositae, Part 1	
Compositae, Part 2	
Graminae	
(Obtainable only from the Queen's Printer. Price $1.50 a set.)	
Weeds, Grande Prairie	Pam. No. 117

Line Elevators Farm Service

An Illustrated Guide to Prairie Weeds	Bul. No. 2
Illustrated Weed Chart	

5 General

Canada Department of Agriculture

Farming in Canada	Booklet

IX POULTRY

Alberta Department of Agriculture

Brooding and Rearing of Chicks and Poults	Leaflet 56
Feeding and Management of Laying and Breeding Flocks	Bul. No. 66
Poultry Catching Crate	Leaflet 61
Preparing Poultry on the Farm for Marketing	Leaflet 61
Production of Quality Market Eggs	Leaflet 39
Protein Mineral Supplements in Poultry Rations	Leaflet 62
Turkey Raising in Alberta	Bul. No. 1
Winter Management of the Poultry Flocks	Mimeograph

(See also poultry diseases and disorders under "Insects, Diseases, and Pests", "Poultry".)

Canada Department of Agriculture

Canadian Poultry Handbook	Pub. No. 683
Canadian Record of Performance for Standard Bred Poultry	Report
Capons and Caponizing	Pub. No. 613
Chicks, Graded	Folder
Chicks, Sight Sexing Barred Rock Baby	Pub. No. 718
Chicks, The Efficient Brooding of	W.P.S. No. 63
Chicks, The Range Rearing of	W.P.S. No. 64
Colony Houses	Pub. No. 640
Culling Hens, Guide to	Pub. No. 675
Dressing Poultry, Standards of Quality for	Folder
Egg Grades, Canadian Standard	Folder
Egg Quality, Conservation of	W.P.S. No. 57
Eggs, The Production, Identification and Retention of Quality in	Pub. No. 782
Fattening Poultry for Market	Pub. No. 745
Feeds and Feeding, Poultry	Pub. No. 541
Goose Raising	Pub. No. 848
Incubation, Artificial	Pub. No. 682
Incubation, Natural	Pub. No. 671
Pasture for Poultry	Pub. No. 771
Preparing Poultry for Market	Pub. No. 581
Standard Methods for Preparation of Market Poultry	Pub. No. 594
Use of Wax in the Plucking of Poultry	Report

X. SOILS AND WATER, including IRRIGATION and CONSERVATION

1. Conservation

Alberta Department of Agriculture

Peace River District Farm Water Supply Assistance Policy	Form 105-102
Burn-out Lands in Southern Saskatchewan, The Improvement of	Pub. No. 600
Regrassing Abandoned Farms, Submarginal Cultivated Lands and Depleted Pastures in the Prairie Areas of Western Canada	Pub. No. 720
Soil Drifting Control in the Prairie Provinces	Pub. No. 568

Alberta Wheat Pool

Save our Soil

Line Elevator Farm Service

Trash Cover Prevents Erosion
Water Erosion of Soils in Prairie Provinces — Bul. No. 3

Royal Bank of Canada (any branch, or Main Office in Montreal)

Conservation of Wild Life (Carling Conservation Club reprint) — Pamphlet
Conservation of Soil (Monthly Letter, August of 1946) — Folder
Making Money by Saving Soil — Folder

Audubon Society of Canada

Canadian Nature (Outdoors Illustrated in United States)
Conservation Illustrated — Booklet

New York State College of Agriculture

Cornell Rural School Leaflet

American Education Press

Balance in Nature

School Aids and Textbooks Publishing Company

The Rodent Family, Birds of Prey

Alberta Department of Education

The Story of the Soil

2 Soil Fertility

Alberta Department of Agriculture

Fertilizers in Alberta — Cir. No. 5

Canada Department of Agriculture

Farm Manure — W.P.S. No. 27
Fertilizers for Various Crops — W.P.S. No. 25
Plant Evaluation--How to Value the Plant Food Content of Different Fertilizers — Pub. No. 583
Soil Moisture, Wind Erosion and Fertility of some Canadian Prairie Soils — Pub. No. 819

3. Soil Surveys

Canada Department of Agriculture (see list of available publications).

University of Alberta

Soil Survey Report of Sullivan Lake Sheet
Soil Survey Report of Lethbridge-Pincher Creek Sheet
Soil Survey Report of Milk River Sheet
Soil Survey of Blackfoot-Calgary Sheets
Soil Survey of the Rosebud-Banff Sheet
Soil Survey of Wainwright Vermilion Sheets
Soil Survey of the Peace Hills Sheet (Wetaskiwin)
Soil Survey of the Red Deer Sheet
Soil Survey of the Rycroft-Watino Sheet

4 Irrigation

Canada Department of Agriculture

Irrigating a Prairie Farm Garden	Pub No. 657

Saskatchewan Department of Agriculture

Practical Irrigation for Beginners

5. General

Canada Department of Agriculture

Farming in Canada	Booklet
Land Clearing	Pub. No. 739
Land Use Classification in the Special Areas of Alberta	Pub. No. 739
Land Utilization in Southern Alberta, An Economic Study of	Pub. No. 610
Organic Soil Management for Vegetables	Pub. No. 853
Soils, Guide for the Selection of Agricultural	Pub. No. 748

XI. FARM SOIL

University of Alberta, Faculty of Education ~~Ed~~ mimeographs

A Community-Shop Program
A Course Outline for Farm Mechanics
Agricultural Engineering Education
Farm Mechanics Supplies
Farm Shop Equipment, Vocational Agriculture
Farm Shop Work
Farm Power and Machinery
Rural Electrification
Vocational Agriculture Building, Plan for a

PUBLISHERS:

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Thomas Nelson and Sons, 91 Wellington Street West, Toronto, Ontario.
Line Elevator Farm Service, 763 Grain Exchange Building, Winnipeg, Manitoba.
Alberta Wheat Pool, Calgary, Alberta.
American Plant Food Council, Inc., 910 - 17th Street N.W., Washington 6, D.C.
Extension Service, Saskatchewan Department of Agriculture, Regina, Sask.
Barley Improvement Institute, 206 Grain Exchange Building, Winnipeg, Manitoba.
The Ryerson Press, 249 Queen Street West, Toronto, Ontario.
National Agricultural Supply Company, Fort Atkinson, Wisconsin.
Meredith Publishing Company, Meredith Building, 1714 Locust Street, Des Moines 3, Iowa.
Extension Service, Department of Agriculture, Victoria, B.C.
Extension Service, Department of Agriculture, Winnipeg, Manitoba.
National Farm Book Company, Viroqua, Wisconsin.
Audubon Society of Canada, 177 Jarvis Street, Toronto 2, Ontario.
Department of Rural Education, New York State Agricultural College, Ithaca, New York.
American Education Press, 400 S. Front Street, Columbus, Ohio.
H. R. Larson Publishing Company, 302 First Avenue North, Saskatoon.
School Aids and Text-Book Publishing Company, 1951 Albert Street, Regina, Sask.
Macmillan's in Canada, 70 Bond Street, Toronto.
Queen's Printer, Ottawa.
McGraw-Hill Company of Canada, 12 Richmond Street East, Toronto.
Longmans, Green and Company, 25 Victoria Street, Toronto. (Lippincott's)

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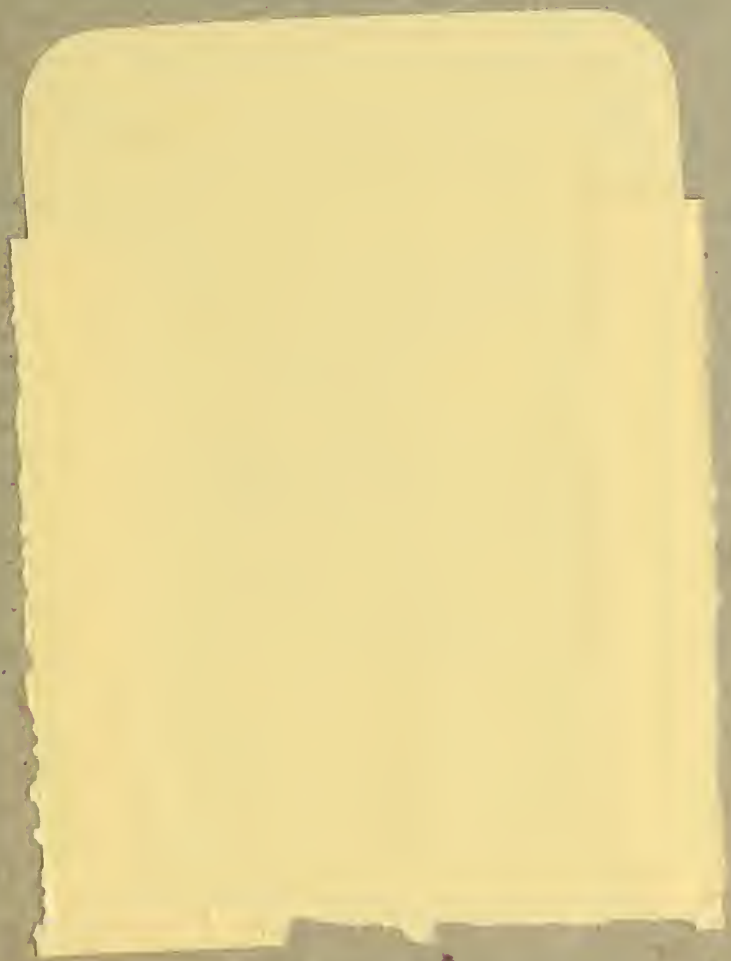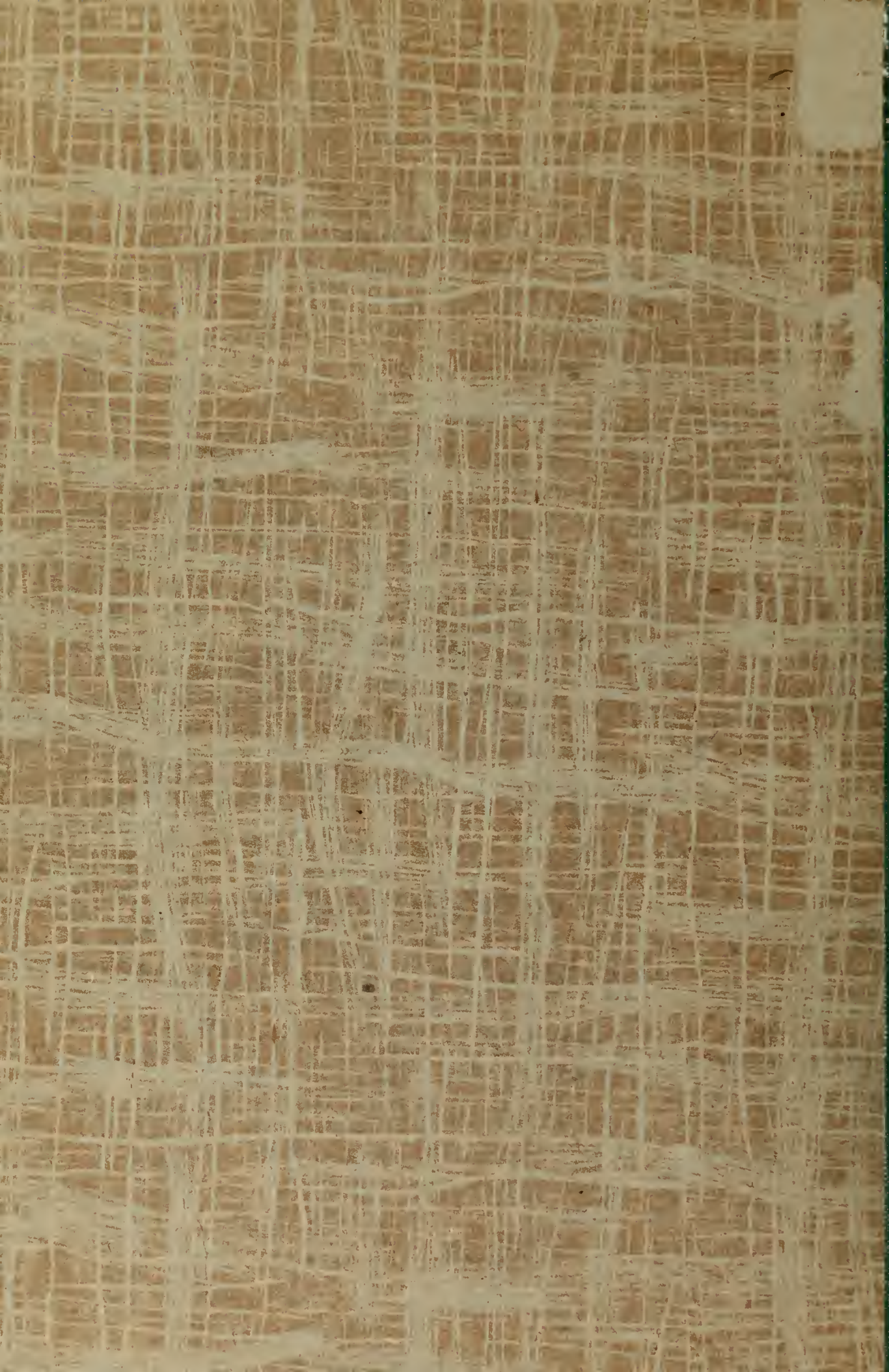
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